

WHAT IS CLAIMED IS:

1. A wavelength stabilization module having a laser diode which irradiates a laser beam at the front side and the rear side thereof, comprising:

a collimator for paralleling the laser beam irradiated at the rear side;

a beam splitter for splitting the laser beam passing through the collimator into the two directional laser beams;

a light-receiving element for receiving one of the split laser beams;

a filter for transmitting a specific wavelength of the other of the split laser beams;

a light-receiving element array for receiving the laser beam passing through the filter; and

a controller for controlling the output wavelength of the laser diode using the signals output from the light-receiving element and the light-receiving element array,

wherein the filter and the light-receiving element array are tilted at a predetermined angle with respect to the laser beam and lock the wavelength using an incident angle dependency of the laser beam passing through the filter.

2. The wavelength stabilization module according to claim 1, wherein the filter and the light-receiving element array are fixed on a sub-mount and are blocked.

3. The wavelength stabilization module according to claim 1, further

comprising a TEC (Thermo-Electric Cooler), wherein the TEC comprises a thermistor for detecting the temperature and a TEC driver for receiving and maintaining uniform the temperature detected in the thermistor.

4. The wavelength stabilization module according to claim 1, wherein the predetermined angle is in the range of 2° to 10° .

5. The wavelength stabilization module according to claim 1, wherein the beam splitter splits the laser beam passing through the collimator so that some portion thereof is directed to the light-receiving element and some portion thereof is directed to the filter.

6. The wavelength stabilization module according to claim 1, wherein the light-receiving element array comprises four light-receiving elements, and the light-receiving elements are positioned at certain intervals.

7. The wavelength stabilization module according to claim 1, wherein the controller includes an operation amplifier and a laser diode driver.

8. A method of manufacturing the wavelength stabilization module, comprising the steps of:

assembling a laser diode, a collimator, a beam splitter, and a light-receiving element on a TEC;

mounting the TEC on a butterfly package;

applying an input signal to the laser diode to operate; and
mounting a sub-mount mounted with the filter and the light-receiving element array at a predetermined angle and a predetermined distance, while monitoring the wavelength of the beam of the laser diode, under the temperature controlled by the TEC.

9. The method according to claim 8, wherein the sub-mount mounted with the filter and the light-receiving element array use a silicon substrate and are manufactured with a micro-machining process.

10. The method according to claim 9, wherein a pattern or a trench is formed in the sub-mount and the filter and the light-receiving element array are mounted therein.